

## I<sup>2</sup>C PRECISION 24-BIT ADC FOR BAROMETER AND ALTIMETER

### Features

- 1.8V to 3.6V Supply Voltage
- Full Data Compensation
- Command-based Reading, Compensated (Optional)
  - Pressure: 20-bit Measurement (Pascals)
  - Altitude: 20-bit Measurement (Meters)
  - Temperature: 20-bit Measurement (Celsius)
- Configurable ADC Decimation Rate via Commands
- Programmable Events and Interrupt Controls
- Altitude Resolution down to 0.01 meter
- High-speed I<sup>2</sup>C Digital Output Interface (Up to 1 MHz)

### Applications

- High Precision Mobile Altimeter / Barometer
- Industrial Pressure and Temperature Sensor System
- Automotive Systems
- Personal Electronics Altimetry
- Adventure and Sports watches
- Medical Gas Control System
- Weather Station Equipment
- Indoor Navigation and Map Assist

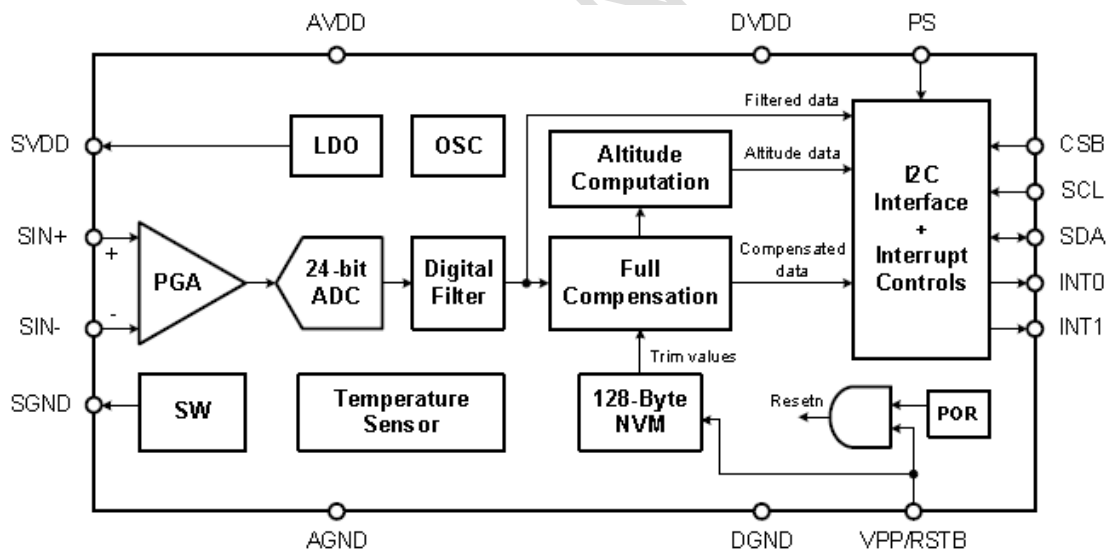


Figure 1: Device block diagram

### Descriptions

The CMT3501B2 is an ideal single-chip solution for high precision signal measurement with an I<sup>2</sup>C interface to provide accurate Temperature, Pressure or Altitude data. The device digitizes the incoming Pressure and Temperature signals by an internal high resolution 24-bit ADC. The Altitude value is calculated by a specific patented algorithm according to the pressure and temperature data. Data compensation is integrated internally to save the effort of the external host MCU system. Easy command-based data acquisition interface and programmable interrupt control is available. Typical active supply current is 5.7uA per measurement-second while the ADC output is filtered and decimated by 256. Pressure output can be resolved with output in fractions of a Pascal, and Altitude can be resolved in 0.01 meter. The CMT3501B2 operated with a power supply from 1.8V to 3.6V and a temperature range from -10°C to 125°C.

Table 1. Pin Descriptions

No	Pin	I/O	Function
1	SVDD	O	External sensor power supply
2	SIN+	I	Positive signal input pin
3	SIN-	I	Negative signal input pin
4	SGND	O	External sensor ground
5	AGND	I	Analog ground
6	DGND	I	Digital ground
7	VPP/ RSTB	I	Power supply dedicated for NVM burning or external active-low reset input*
8	INT1	O	Interrupt 1 output pin
9	INT0	O	Interrupt 0 output pin
10	SDA	IO	I <sup>2</sup> C or SPI serial data input / output
11	SCL	I	I <sup>2</sup> C or SPI serial dock input pin
12	CSB	I	I <sup>2</sup> C address select pin (1-0xEC; 0-0xEE) or SPI chip select
13	PS	I	Interface protocol select pin (1-I <sup>2</sup> C; 0-SPI)
14	DVDD	I	1.8-3.6V digital power supply input pin
15	AVDD	I	1.8-3.6V analog power supply input pin

\*Leave this pin unconnected when it is unused.

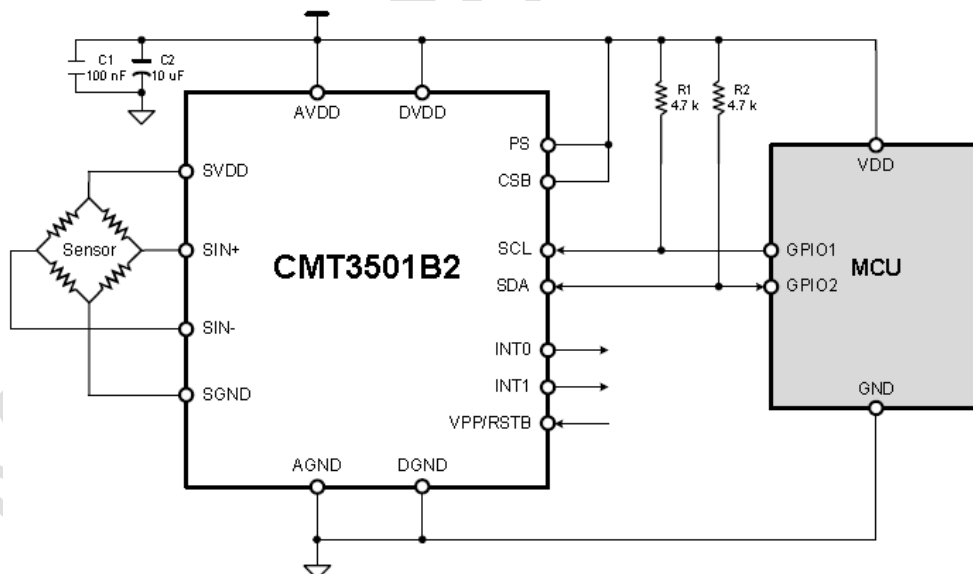


Figure 2: Typical application circuit with I<sup>2</sup>C protocol communication

Copyright. CMOSTEK Microelectronics Co., Ltd. All rights are reserved.

The information furnished by CMOSTEK is believed to be accurate and reliable. However, no responsibility is assumed for inaccuracies and specifications within this document are subject to change without notice. The material contained herein is the exclusive property of CMOSTEK and shall not be distributed, reproduced, or disclosed in whole or in part without prior written permission of CMOSTEK. CMOSTEK products are not authorized for use as critical components in life support devices or systems without express written approval of CMOSTEK. The CMOSTEK logo is a registered trademark of CMOSTEK Microelectronics Co., Ltd. All other names are the property of their respective owners.